

**REMARKS/ARGUMENTS**

Claims 1-12 and 14-18 are pending in the application; the status of the claims is as follows:

Claims 1, 12, and 15 are objected to because of informalities.

Claims 9-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,360,775 B1 to Barth et al ("Barth").

Claims 1-8 and 14-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Published Application No. 2002/0044721 A1 to Bjorklund ("Bjorklund") in view of Barth.

Claims 1, 12 and 15 have been amended to more particularly point out and distinctly claim the invention. These changes do not introduce any new matter. The changes are to correct the formal matters noted by the Examiner in the second paragraph on Page 2 of the Office Action. These changes are not necessitated by the prior art, are unrelated to the patentability of the invention over the prior art, and do not introduce any new matter.

**35 U.S.C. § 103(a) Rejections**

The rejection of claims 9-12 under 35 U.S.C. § 103(a), as being unpatentable over Barth, is respectfully traversed based on the following.

Barth shows a method for providing movement within a capillary by providing a bubble 402 within a fluid 1 using heat produced by current through a resistor 316. The bubble is positioned at an optical pathway provided by optical waveguides (340, 342, 344 and 346). When no bubble is formed, the capillary is optically transparent. When the bubble 402 is formed, the gas of the bubble has a different index of refraction from the wave guides, thus producing reflection by total internal reflection. In addition to providing switching by creation of the bubble, Barth suggests that the bubble may also be used in pumping (column 11, lines 45-48).

It is stated in the Office Action that a micropump applies pressure to liquid in a groove to move the bubble. This is incorrect. The bubble is formed and moved by resistive heat in conjunction with the configuration of the capillary (col. 15, line 4-52). The bubble itself may also be used for pumping (Abstract, lines 15-18, col. 15, lines 55-58). There is no micropump disclosed in Barth apart from the bubble 402.

In contrast to the cited reference, claim 9 includes:

a switching member movably provided in the groove; and  
a micro pump coupled to the groove for transferring the liquid in the groove to cause the switching member to move within the groove in response to pressure applied from the pump via the liquid.

Barth does not show or suggest moving an optical switching member using a pump. In Barth, the optical switching member *is* the bubble. The bubble is formed in the fluid stream by heating. The reference then suggests that the bubble may be useful in pumping by applying pressure to the fluid. There is no discussion in the reference as to what may be moved by the pumping action of the bubble. The only optical switching element that may be moved is the bubble itself. The bubble cannot be moved by pressure on a fluid when the bubble is the source of that pressure. There is no suggestion of moving anything in particular in Barth using the bubble pump. Barth merely suggests that the bubble configuration may be useful as a pump. Therefore, there is no suggestion to modify the structures of Barth to meet the limitations of the claim because Barth modifications would be incompatible with its disclosure. Thus, the cited reference does not show or suggest the invention of claim 9. Claims 10-12 are dependent upon claim 9 and thus include every limitation of claim 9. Similarly to claim 9, the cited reference does not show or suggest the limitations of claims 10-12.

Accordingly, it is respectfully requested that the rejection of claims 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Barth, be reconsidered and withdrawn.

The rejection of claims 1-8 and 14-18 under 35 U.S.C. § 103(a), as being unpatentable over Bjorklund in view of Barth, is respectfully traversed based on the following.

Bjorklund shows a device for optical switching using a filter assembly containing a plurality of filters (47, 47', 47'', 47''', 47'''') capable of selectively reflecting light of different wavelengths (paragraph 37). The filter assembly is selectively positioned in the path of a waveguide 11 and selectively reflected to waveguide 15 or passed to waveguide 13. The filter assembly is positioned by mechanical actuator 21 acting through a member 19. Actuator 21 may be one of several types of devices (paragraph 65).

In contrast to the cited references, claim 1 includes a structure wherein:

the switching member is moved by applying pressure to a liquid in contact with the switching member.

Barth shows a device where pressure is applied to a fluid by creating a bubble within the liquid. In one embodiment the bubble serves as an optical modulator. Bjorklund shows optical modulators that are manipulated using a mechanical actuator. Neither cited reference shows or suggests moving a switching member by applying pressure to a liquid in contact with the switching member. The Office Action suggests that the pump of Barth may be used to move optical modulators. However, there is no suggestion to do so in either reference. Barth does not state any specific use for the pumping action, only that it is possible. Applying the pumping bubble of Barth to the movement of optical modulators is simply hindsight analysis applied to the references in light of the teachings of Applicants' specification. MPEP §2141.01(III). There is no suggestion of a structure meeting of the quoted limitation in the cited references. To support a *prima facie* case for obviousness, the cited references in combination must show or suggest every element of the claim. MPEP §2143.03. Therefore, claim 1 is not obvious over the cited references. Claims 2-8 and 14 are dependent upon claim 1 and thus include

every limitation of claim 1. Therefore, claims 2-8 and 14 are also not obvious over the cited references.

Also in contrast to the cited references, claim 15 includes a structure wherein:

the switching member is moved by applying pressure [externally] to a liquid in contact with the switching member.

As noted above, Barth shows a device where pressure is applied by creating a bubble within the liquid. Bjorklund shows a device where optical modulators are moved mechanically by an actuator. Neither cited reference shows or suggests moving a switching member by applying pressure to a liquid in contact with the switching member. Therefore, claim 15 is not obvious over the cited references. Claims 16-18 are dependent upon claim 15 and thus include every limitation of claim 15. Therefore, claims 16-18 are also not obvious over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 1-8, and 14-18 under 35 U.S.C. § 103(a) as being unpatentable over Bjorklund in view of Barth, be reconsidered and withdrawn.

### CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

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Amendment dated April 23, 2004  
Reply to Office Action of February 3, 2004


Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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